

**METHODS OF USING CHEMICO-MECHANICAL MICROVALVE DEVICES  
FOR THE SELECTIVE SEPARATION OF COMPONENTS FROM MULTI-  
COMPONENT FLUID SAMPLES**

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**ABSTRACT OF THE DISCLOSURE**

Methods for selectively separating at least one component from a multi-  
component fluidic sample are provided. In the subject methods, the fluidic sample is  
10 introduced into a micro-fluidic device that includes at least one micro-valve made up  
of a phase reversible material. The multi-component fluidic sample is then contacted  
with the microvalve in a microfluidic device under conditions sufficient for the at least  
one component to enter the microvalve, while the remaining constituents of the fluidic  
sample remain outside of the microvalve. Also provided are kits for use in practicing  
15 the subject methods, where the kits include at least a microfluidic device having a  
microvalve and instructional material (or means for obtaining the same) on how to use  
the device in the subject methods. The subject devices find use in a variety of  
applications, including sample desalting and concentration applications.